GULF-CARIBBEAN RADIOLOGICAL DEFENSE

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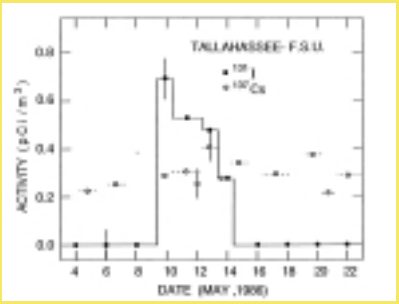
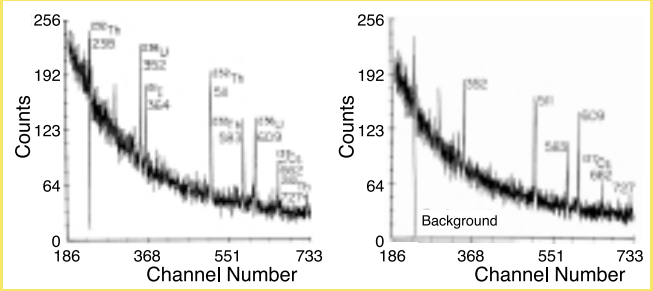
The greatest danger of terrorism is terror itself. The best defense is publicly accessible monitoring of threats such as radiation. The large number of islands in the Gulf and Caribbean would make an ideal staging area for terrorists. Also the Chernobyl-type reactors under construction off and on again in Cuba would make likely terrorist targets and would be dangerous even without deliberate terrorism. A network of atmospheric radiation monitoring stations is proposed to detect any suspicious activity in the region involving radioactive materials.

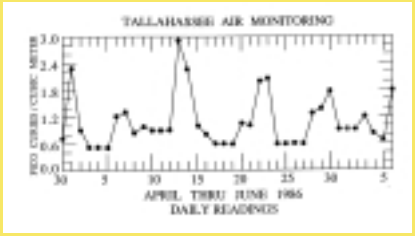




The fission fragment Iodine-131 with a half-life of 8 days was detected in the air over Tallahassee from the Chernobyl reactor accident on April 26, 1986. The figure above shows a clear peak on May 10 through May 14, 1986. The 364 keV gamma ray following the beta decay of Iodine-131 absorbed on the air filters was detected using a high resolution Germanium detector. By contrast the peak seen in the total beta activity in Tallahassee air is indistingushable from other peaks which occur on an almost weekly basis, as shown in the figure below. The reason for the increased sensitivity is shown in the figures above right.

The left curve above shows the gamma-ray spectrum of the air sample for May 10-11,1986, along with room background from the hastily prepared counting station with limited shielding. The room background is shown in the right curve. The 364 keV peak from Iodine-131 is clearly visible in the left curve and absent from the right one. The high energy resolution of a Ge gamma detector allows one to deduce the source of radioactivity and help determine what might have caused the event.

The reactors under construction on and off again in Juragua, Cuba, (above) provide an example of the danger posed by radiological threats in the Gulf-Caribbean region. The map below shows that prevailing winds could carry dangerous aerosols from islands such as Cuba to Florida in one day and reach much of the U.S. in two days. Average arrival times are 2 to 4 times this minimum, unfortunately still a terrorist's dream and a nightmare for Americans.



Preliminary Cost Estimates

	Construction	Annual
Central laboratory:	$300,000	$150,000
Each monitoring station:	$150,000	$ 75,000
Total cost (w/ 5 stations):	$1,050,000	$525,000

We propose to set up a series of monitoring stations at U.S. Universities and Oceanographic stations around the Gulf of Mexico. High sensitivity for radioactive particulates would be provided by large volume air samplers. Real time response would be provided by NaI scintillators located at the air samplers and connected to the central monitoring system at Florida State University. The air filters would then be shipped to and counted at Florida State with well shielded, high resolution Ge detectors which can identify the specific radionuclides in the samples. The Florida State laboratory has considerable experience with Ge detectors in basic nuclear physics research. The proposed monitoring system is designed to provide rapid response in the event of any release of fission products in the Caribbean or Gulf of Mexico. The system would consist of one central laboratory and a number of regional monitoring stations.